Are policy makers aware of the climate security nexus? Mapping climate security policy narratives in Zimbabwe

Objectives and research questions

The relationship between climate and conflict has been receiving increased attention in the past decade, as the effects of climate change have shown to impact social and political stability. However, despite heightened interest and awareness regarding the potential linkages between the climate crisis and peace and security, this relationship has yet to be reflected in the policy arena. Policy cycles for national security and for climate adaptation and mitigation are often detached and do not reflect the complex pathways that link the two dimensions (Brzoska, 2012).

To explore the potential policy gap related to climate security, an innovative, data-driven method has been developed to assess the policy landscape of the Climate Security Observatory countries. Drawing on cutting edge academic research that relies on social media platforms as proxies for wider public discourse and engagement, digital methods approaches were applied to detect issue formations in online networked content (Rogers et al., 2015).

The main research questions we address are:

1. How salient is climate security in the policy agenda of the Climate Security Observatory countries?
2. How are the linkages between climate, socioeconomic risks and insecurities, and conflict represented in the public narratives of policymakers?

A machine-learning approach was applied to extract, process and analyse thousands of publicly available Tweets from policymakers to investigate the salience of climate security narratives and dynamics among policy actors at the national level.

This fact sheet summarises the key findings for Zimbabwe. Overall, results show a disassociation between climate, socioeconomic insecurities, and conflict in the public communications of policy makers. Together with the Policy Coherence assessment, insights emerging from this analysis provide a starting point for the development of evidence-based advocacy and engagement strategies so that effective responses to climate change are sensitive to the interlinkages with the security context in the country.

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Methods and data

Twitter has been widely recognised as an important venue for institutional communications; news media increasingly rely on the platform as a primary source for official statements and position-taking. Its potential as a real-time, topic-driven platform enables rapid detection of trends to uncover discourse dynamics (McDonald, 2013). Hence, to frame perceptions around the climate-socioeconomic insecurities-conflict nexus at the policy level in Zimbabwe, an analysis of government communications on Twitter was performed.

An algorithm was developed to extract all publicly available Tweets from the official accounts of central government bodies, ministries of agriculture, environment, and natural resources, as well as national security bodies (Table 1), from which the presence of

a climate security taxonomy was explored. In total, 15,465 Tweets were collected between 2014-12-10 to 2021-08-04.

Table 1 Official Twitter accounts of state actors selected for analysis.

Twitter Accounts	No. Tweets
President Emmerson Mnangagwa	678
Ministry Of Information, Publicity And Broadcasting	6149
Parliament	2271
Mininistry of Lands, Agriculture, Fisheries, Water & Rural Resettlemnt	877
Ministry Of Environment, Climate, Tourism & Hospitality	1239
Ministry Of Energy And Power Development	241
Ministry Of Mines And Mining Development	12
Police	3997

Building on the country-level impact pathways developed for Zimbabwe and the other Climate Security Observatory countries, a taxonomy was constructed to establish broad categories and specific topics for classification. The overall framework consists of 115 terms, organised within seven groups of variables: Climate, Conflict, Agricultural impacts, Resources, Socioeconomic, Socioecological, Political/Institutional.

The terms were matched to AGROVOC[1], the Food and Agriculture Organisation's open-source, multilingual vocabulary. AGROVOC consists of more than 37,000 concepts covering FAO's areas of interest, such as food, nutrition, agriculture, fisheries, forestry, environment, etc. Vocabulary is available in up to 37 languages, which is particularly relevant as the multi-language definitions enable identification of topics in the original idioms of Tweets.

For each topic, the corresponding AGROVOC definition was extracted, and a custom algorithm was developed to detect and classify the related terminology within the text of the Tweets. The topics were then assessed through correlation measures and sentiment analysis to identify the dynamics of linkages among them.

In addition, leveraging on specific affordances of Twitter, network analysis enabled assessing the relationships among policy actors by analysing the accounts mentioned on their tweets. As defined in the Climate Security Observatory's country level network analysis , a network is a graphical representation of the relationships (edges) between different entities (nodes). In this case, the @mentions are the nodes and their relations are the lines connecting pairs of nodes. This means that accounts are connected if they are mentioned by another. As the focus of this analysis is on the interaction between national security and climate adaptation and mitigation policy narratives, the network was restricted to the links between the 8 government accounts.

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[1] https://agrovoc.fao.org

Results

Drawing on the mechanisms through which climate stressors may interact with socioeconomic, ecological, and political dimensions identified in the Zimbabwe impact pathways, figure 1 shows their overall distribution, as frequency counts. 'Livestock' and 'Water' are the most frequent topics in the communications of Zimbabwean state actors, followed by socioeconomic indicators 'Poverty' and 'Food security'. The most present topics for climate and conflict variables are 'Rain' and 'Armed conflicts', respectively.

Figure 1 Distribution of impact pathway variables identified in Tweets from the official accounts of selected government bodies. More frequent terms represented by wider wedges in the pie chart.

While the overall distribution of variables uncovers the cumulative prominence of topics, a temporal distribution provides a more nuanced perception of topic prevalence over time. Beyond the presence or absence of a topic, the algorithm also quantified their presence[2]. Figure 2 presents timelines for the prevalence of climate variables (top) and conflict variables (bottom) in the corpus of tweets. The visualisation indicates not only which topics were in focus, but also when they were of most interest. Among climate variables, 'Drought' had a significant peak in early 2016, whereas 'Rain' presented a peak in at the end of the same year, reflecting the erratic impacts of El Niño that year. The Conflict timeline shows higher variability among variables. The peaks for 'Crime', 'Sexual violence' and 'Theft' in 2020 reflect the increasing unrest and fragility of Zimbabwe's democratic transition.

[2] Values were normalized on a scale from 0-1, so that prevalence is shown as a proportion of all frequency, on all topics, in the corpus of Tweets.

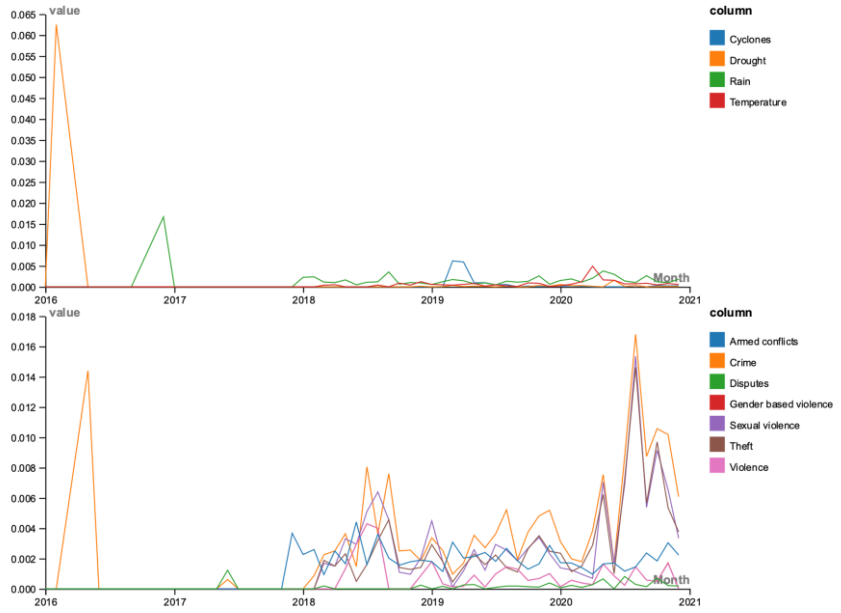

Figure 2 Timeline of Tweets that contain climate (top) and conflict (bottom) variables.

To further unpack the interlinkages between different topics within the Tweets, a measure of correlation was established to identify when terms are present within the same body of text. A strong correlation indicates that the terms consistently occur within the same Tweet, whereas a negative correlation denotes they are occurring in separate Tweets. Figure 3 displays the seven variables most positively correlated to climate variables (right) and to conflict variables (left).

In the case of climate, the strongest co-occurrences are with socioeconomic variables 'Food security' and 'Poverty'. The agricultural impact variable 'Damage' is likely related to the catastrophic damage caused by Cyclone Idai. Concerning conflict, corruption is by far the dominant association. The lack of significant connections between climate and conflict topics suggests the pathways through which climate shocks can impact insecurity are not widespread in the narratives of Zimbabwean policy actors.

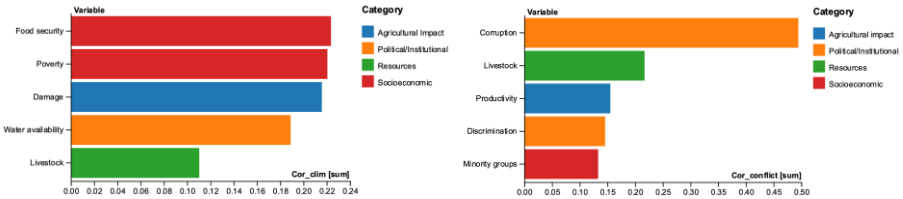

Figure 3 Top 7 correlations between climate (left) and conflict (right) with other topics identified the Tweets extracted from the official accounts of selected government bodies.

The above statement is further illustrated by the direct links between climate and conflict presented in Figure 4, which features the correlations among the four main climate

stressors and the types of conflict described in the impact pathways. The strongest co-occurrence concerns ‘Temperature’ with ‘Theft’, but it is notable that most variables present negative associations, especially with regards to ‘Drought’. Such gaps in the discourse point to a need for evidence-based advocacy to strengthen awareness of climate security pathways.

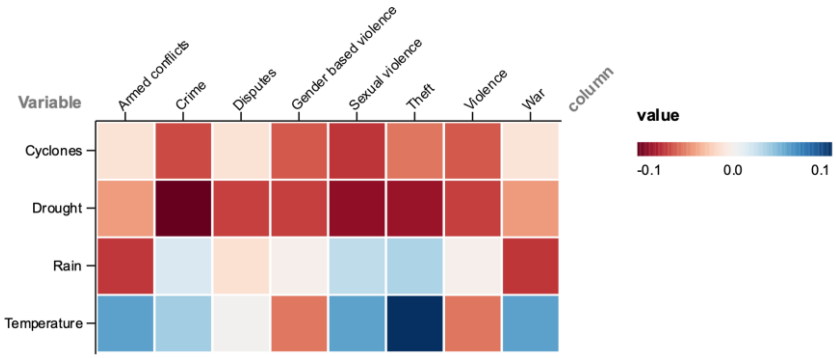

Figure 4 Correlations between climate shocks and conflict types identified in the Tweets extracted from the official accounts of selected government bodies.

A sentiment analysis algorithm was applied to identify the direction – or tone – of the Tweets. The analysis enables the creation of a sentiment index, where the scale of polarity consists of counting terms related to “positive” sentiment and terms related to “negative” sentiment, and where unrelated words have a score of 0. Figure 5 presents the sentiment of Tweets in relation to the impact pathway variables in each category.

While some positive results can be surprising, given the generally negative connotations attributed to the climate crisis, these should be interpreted from an institutional communications lens, i.e. the messages policy makers wish to convey publicly. As such, Tweets tend to focus on actions, solutions or achievements. For instance, conflict variables are often addressed from the perspective of state measures to tackle and prevent violence. Likewise, in the case of ‘Rain’ or ‘Cyclones’, Tweets could be focusing on disaster response. Hence, topics associated to a negative sentiment can indicate not only areas where risks and insecurities are greater, but also challenges to which policy solutions have yet to advance.

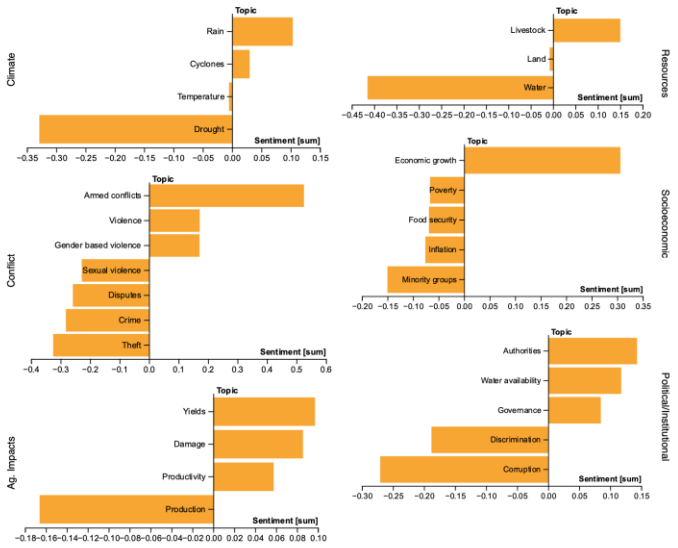

Figure 5 Sentiment of Tweets, by topic.

Lastly, one of the key affordances of Twitter is user interaction through the @mention, when an account is tagged and notified, giving it the ability to engage in direct public dialogue. The network in figure 6 presents a visualization of the dynamics between the key state bodies representing climate, agriculture, natural resources, environment, and security interests. The spatialization of nodes was estimated with a force-directed algorithm that turns structural proximities into visual proximities (Jacomy et al., 2014). This means that linked nodes are drawn closer while unrelated nodes are pushed farther apart, thus facilitating interpretation of the data. The sizes of the nodes and the labels are partitioned by degree centrality, a measure of the number of connections to a particular node, whereas the edges are also weighed by the number of times a pair of nodes is connected. The strongest connection is between the Zimbabwean president and the central communications body (Ministry of Information, Publicity and Broadcasting). The police account is connected to almost all others, though the strength of the linkages is low. The potential gaps in dialogue are represented by weaker and absent connections.

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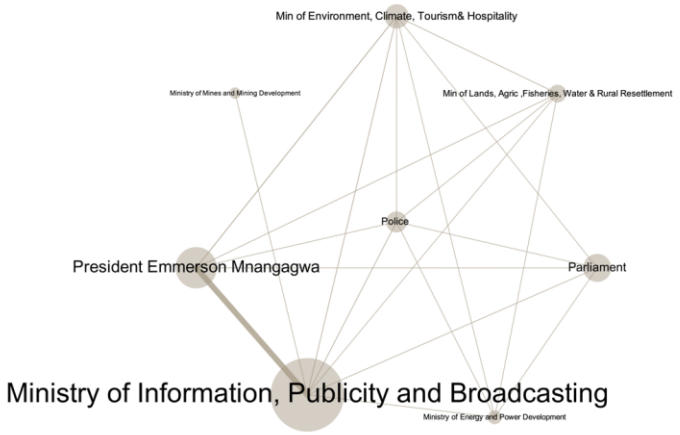

Figure 6 Network of policy actors.

Conclusion

Content analysis and network analysis techniques enable identification of trends in political agendas and actors over time and across geographies. The machine-driven approach employed to explore the salience of climate security in the Twitter communications of Zimbabwean policy actors found that the pathways that link climate stressors, socioeconomic risks, and conflict are not well represented in the narratives of government bodies. The mostly negative correlations between climate and conflict variables in the text of Tweets indicate a disconnect between climate and security-related policy domains. The sentiment analysis reflects the tone with which policymakers frame various topics, with negative sentiment indicating variables that present the most adverse issues and that could signal entry points for further investigations into their place within the climate security nexus. Lastly, the network analysis points to a need for enhanced dialogue among the various institutional bodies for the development of integrated policy responses.

References

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